DETAILS OF THE WEATHER OF THE MONTH OF THE UNITED STATES.

CYCLONES AND ANTICYCLONES.

By W. P. DAY, Observer.

LOWS were numerous and a considerable portion were abnormal in their movement. Three of the Alberta LOWS moved far to the south of the normal path. Secondary developments occurred frequently. High pressure areas were not important, as a rule, though a greater number were observed than usual.

Tables showing the number of HIGHS and LOWS by types follows:

LOWS.

	Alberta.	North Pacific.	South Pacific.	Northern Rocky Mountain.	Colorado.	Texas.	East Gulf.	South Atlantic.	Central.	Total.
February, 1921	6.0	3.0	1.0	.....	3.0	2.0	1.0	1.0	.....	17.0
Average number, 1892–1912, inclusive	3.1	2.3	1.0	0.2	1.5	1.5	0.5	0.2	0.7	11.0

HIGHS.

	North Pacific.	South Pacific.	Alberta.	Plateau and Rocky Mountain Region.	Hudson Bay.	Total.
February, 1921	2.0	2.0	4.0	2.0	1.0	11.0
Average number, 1892–1912, inclusive	0.8	0.5	4.7	1.2	0.6	7.8

THE WEATHER ELEMENTS.

By P. C. DAY, Climatologist and Chief of Division.

[Weather Bureau, Washington, D. C., Apr. 1, 1921.]

PRESSURE AND WINDS.

The atmospheric pressure during February, 1921, like that of the preceding months of the winter, exhibited few marked variations from day to day, and the gradients from HIGHS to LOWS or otherwise were in most cases of small dimensions. As a result, winds were usually of moderate force, and temperature changes lacked the abruptness usual to the winter season and were confined mainly within narrow limits.

Storm areas were frequently indefinite and usually developed little strength until reaching the more easterly districts. Low-pressure areas, giving precipitation over varying districts and in rather generous amounts, prevailed from the central valleys eastward during the latter part of the first and the early part of the second decade, and again, near the end of the second decade, low pressure over southern and eastern districts caused generous precipitation from the Southern Plains region, eastward and northeastward to the Atlantic coast. During the night of the 22d–23d low pressure developed over the region of the Great Lakes, and at the morning observation of the 23d it appeared as a storm of considerable severity, central slightly to the northeastward of Lake Huron, and precipitation had covered a wide territory from eastern Texas and the lower Mississippi Valley northward. This precipitation area moved eastward to the Atlantic coast during the following 24 hours, but the falls of snow or rain were mostly light. The latter part of the month had no extensive barometric depressions, but local LOWS brought precipitation to scattered areas, an unusually heavy fall occurring at Del Rio, Tex., where nearly 6 inches fell in a few hours on the night of the 27th–28th.

The most important anticyclone of the month appeared in the far Northwest on the morning of the 16th and moved southeastward into the Missouri and central Mississippi valleys within the following 48 hours, at which time it was strongly reinforced by another apparently moving southward from the British Northwest Territories. The combined high pressures dominated the weather over the northern districts for several days, during which time the coldest weather of the month prevailed over the Dakotas and thence eastward to the Great Lakes.

For the month as a whole, pressure was high toward the south, diminishing northward into the Canadian Provinces westward of the Great Lakes. The negative departures were of moderate magnitude from the Missouri Valley northward into the Canadian Provinces, but in other districts the departures, both negative and positive, were mainly unimportant.

The general depression of the barometric pressure toward the north, as has been the case in the preceding months of the winter, again favored the movement of warm air from the south into far northern regions, the result of which becomes apparent on examining Chart IV, showing the departure of the mean surface temperature of the month from the normal.

Due to the absence of pressure gradients showing marked intensity, high winds occurred at infrequent intervals, and less inconvenience from drifting snow and other evidences of wind activity was experienced than is usual for February.

TEMPERATURE.

The end of February closed a winter of unusual mildness over the greater part of the country, and in some sections of the Middle West the winter as a whole stands without a rival in the persistence of mild weather, bright, sunshiny days, and the absence of severe storms and other disagreeable features usual to some period of each winter.

The more important cold periods of the month were on the 1st, from the Great Lakes to New England; on the 7th and 8th, over the Great Plains, Rocky Mountains, and Plateau States; over the Pacific Coast States on the 15th to 17th; from the Dakotas to the Lake Superior district on the 19th; and along the middle and south Atlantic coasts and in portions of the Ohio Valley from the 21st to 25th. The lowest temperature reported during the month, −40°, occurred in the mountain districts of Wyoming, but temperatures nearly as low occurred in Minnesota, and they were −25° or lower in New England and several of the western mountain States.

Warm periods were well scattered through the month, the more important being from the 14th to 16th, when maximum temperatures were unusually high over all central and northern districts from the Rocky Mountains eastward, the readings on the 15th particularly being in many cases the highest ever recorded in February, and at a few places they were the highest of record for any winter month. Over the Southern States from Texas eastward the highest temperatures were usually reported on the 6th to 8th, and over the far Southwest about the 24th to 25th, when the temperatures exceeded any previous records for February at points in southern California.

For the month as a whole the temperature averages were above the normal in practically all portions of the country, and markedly so over the more interior districts where locally it was the warmest February of record.

PRECIPITATION.

The heavy rains during the latter part of the first decade and the first few days of the second decade from Arkansas and portions of adjoining States eastward to the Carolinas, and about the end of the second decade over much of the same district, carried the totals for the month somewhat above normal, and rather frequent precipitation over the Pacific coast, particularly in Oregon and Washington, gave monthly amounts slightly above normal over portions of those States. In practically all other portions of the country the precipitation was below normal, and in parts of Arizona the lack of precipitation, either rain or snow, following other months of dry weather caused a serious scarcity of water, and considerable loss of stock resulted.

SNOWFALL.

The monthly amounts of snowfall were nearly everywhere less than normal, although in a few localities heavy falls were reported. On the 18th and 19th heavy snows for the region occurred from the Panhandle of Texas northeastward and eastward over portions of Oklahoma, Arkansas, and adjoining States, the falls in some cases, particularly in eastern Oklahoma and central Arkansas, being the greatest ever known. The same storm developed considerable energy along the Atlantic coast and snow was general from the Ohio Valley to New England, the falls being unusually heavy in portions of southern New England.

The snow on the ground throughout the month was much less than is usual for the closing month of winter. This was particularly the case in the Great Lake region, where the lack of a sufficient snow cover greatly hampered logging operations, and much loss was sustained thereby. As stated elsewhere in this issue, the snowfall was usually light in the western mountain districts, but only in the more southern portions is the outlook for a good supply of water discouraging.

ICE.

Ice in the rivers and harbors continued of small volume, particularly on the lower Lakes. At Detroit the river was open the entire month, with little interruption to ferry traffic, and similar conditions prevailed at Buffalo. The Connecticut River from Hartford to the Sound was open and navigation between that point and New York was possible during the entire month, a condition hitherto unknown.

Ice of excellent quality was harvested over most northern districts, but farther south the supply was limited, and in many districts where it is usually gathered the winter closed without any formation sufficiently thick to permit of economical gathering.

RELATIVE HUMIDITY.

East of the Mississippi River and over the northern half of the Pacific coast region, the relative humidity was above the normal, harmonizing in a measure with the regions having fairly heavy precipitation during the month. Elsewhere it was less than is usual for February, although in many instances excesses occurred, especially during the morning hours. The deficiencies were rather marked in portions of the Rocky Mountain, western Plains, and the southern half of the Plateau regions, as would be expected from the almost complete absence of precipitation in these regions during the month.

LOCAL STORMS.

Georgia.—Severe storms having some tornado characteristics, occurred on the 10th. Twenty-eight lives were lost at Gardner, and considerable damage to property occurred at that and other points in the vicinity.

Tennessee.—A tornado of small proportions occurred near Trezevant on the 16th, but without material damage.

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STORMS AND WARNINGS. WEATHER AND CROPS.

STORMS AND WEATHER WARNINGS.

Washington forecast district.—The first storm warnings of the month were issued on the 10th for the Atlantic coast from Cape Hatteras to Eastport, Me., in connection with a disturbance that moved rapidly northeastward from the lower Mississippi Valley to the Canadian Maritime Provinces with a marked increase in intensity. These warnings were fully verified along the New England coast.

On the 16th–17th a storm of marked intensity moved directly eastward from Lake Superior to the lower St. Lawrence Valley, and warnings were displayed from Norfolk, Va., to Boston, Mass. They were well verified.

A disturbance of slight intensity which was central over southern Louisiana at 8 a. m. of the 19th moved rapidly northeastward to southeastern Virginia during the ensuing 24 hours with increasing intensity, thence directly northeastward over the ocean to the vicinity of Sable Island, where it was centered as a storm of marked strength at 8 a. m. of the 21st. This storm was attended by northeast and north gales along the Atlantic coast from Cape Henry northward, and a maximum wind velocity of 68 miles an hour from the northeast was registered at Nantucket, Mass. Warnings were displayed well in advance of this storm.

Storm warnings were ordered displayed from Norfolk, Va., to Boston, Mass., on the 21st; from Norfolk, Va., to Eastport, Me., on the 23d; and from Delaware Breakwater to Portland, Me., on the 26th. These warnings were not well verified.

The last storm warnings of the month were issued at 9:30 p. m. on the 27th for the north Atlantic coast in connection with a disturbance that developed off the middle Atlantic coast on that date and moved rapidly northeastward. These warnings were fully verified.

Small-craft warnings were issued for the east Gulf coast on the 19th, and special forecasts of strong winds were sent to open ports on Lake Michigan on the 15th, 16th, 25th, and 26th.

No cold-wave warnings were issued during the month, except for limited areas, as follows:

14th and 17th.—Northern portions of Maine, New Hampshire, and Vermont and extreme northern New York.

19th.—Extreme southern portions of Alabama and Mississippi and extreme northwestern Florida.